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PULMONARY TUMORS IN MICE

III. The Serial Transmission of Induced Lung Tumors¹

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The object of this paper is to record the serial passage of seven lung tumors which appeared in mice following parenteral introduction of 1, 2, 5, 6-dibenzanthracene. Many investigators have found spontaneous (3) or induced (4) lung growths in mice, but only a few have reported efforts to implant the growths into other mice. Tyzzer (14, 15) inoculated five mice subcutaneously from a spontaneous lung tumor of his series without success.² Murray (11) reported the successful transplantation of two lung metastases. Haaland (9) transplanted a spontaneous pulmonary growth into 40 mice with negative results. Gierki (7) transplanted three lung metastases, one of which grew in the inoculated mice. Mercier (10) found massive lymphadenomata in the lungs of a strain of mice which grew, when implanted, into other mice of the same strain.

In most of the above-mentioned efforts to transplant lung growths, no mention was made of any particular strain of mice, and so it is assumed that pure strain animals were not used. Geneticists have shown that the genetic constitution of the inoculated animal is of utmost importance in obtaining successful growth of transplanted tumor tissue. The reader is referred to a publication by Bittner (5) in which this subject has been discussed.

In this laboratory (1) pulmonary tumors have appeared in strain A mice following subcutaneous injection of lard solutions of 1, 2, 5, 6-dibenzanthracene. In the work to be presented, lung tumors arising in strain A mice have been implanted into the subcutaneous tissues of other members of the same strain. A few of the more recent passages have been accomplished by the inoculation of backcross mice obtained by breeding hybrids of strain A and C₃₇ blacks back to the parent strain A stock. These backcross animals have grown the tumors as well as the strain A mice.

The customary trocar technique was used for all implantations, which were made into the subcutaneous tissues of the right axillary

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² In one of these papers Tyzzer (14) records finding intranuclear cell inclusions in the organs of normal mice. This should be of interest to workers in the filterable virus field.

region. The results of inoculation are presented in the following descriptions of the serial transmission of the various tumors.

SERIAL TRANSMISSION

Lung tumor A.—A strain A mouse received subcutaneous injections of a lard-dibenzanthracene solution on April 18 and 26, 1935, and a subcutaneous tumor was noted 140 days after the first injection. The mouse was autopsied on September 19, 1935, and four small nodules, each about 1 mm in diameter, were dissected from its lungs and all were implanted into one mouse. There was no evidence of growth for 46 days, and then a small nodule was palpable at the site of implantation. The nodule grew slowly and was 8 mm in diameter 82 days after inoculation, when it was removed and pieces of it were used to inoculate four other mice. All of these had palpable tumors 13 days later. The largest, measuring 10 by 5 by 4 mm, was used for passage 18 days after inoculation and grew in all the mice. The tumor had undergone 23 serial passages up to December 1, 1936. It has been consistent in its ability to grow rapidly and progressively and destroys the host in 4 to 6 weeks.

Lung tumor B.—A strain A mouse received subcutaneous injections of lard-dibenzanthracene on April 18 and 26, 1935. It was killed and autopsied 187 days later. No tumor was found at the site of injection, but there were numerous nodules in the lungs. One of these, measuring 2 mm in diameter, was dissected out and used to inoculate one mouse in which there was no evidence of growth for 22 days, and then a small nodule was noted at the inoculation site. The nodule grew slowly, and 64 days after implantation it was removed and found to measure 10 by 5 by 5 mm. Pieces were used for passage to four other mice, all of which exhibited definite masses 20 days later. The largest, measuring 14 by 10 by 10 mm, was used for passage to four mice, all of which had definite tumors 16 days later. The tumor had undergone 16 serial passages up to December 1, 1936. It grows progressively in all strain A mice, which die within 6 to 8 weeks.

Lung tumor C.—The strain A mouse in which this tumor arose received subcutaneous injections of lard-dibenzanthracene solution at the same time as did the mice from which lung tumors A and B were obtained. The mouse developed a tumor at the site of injection and was autopsied 167 days after the initial injection. Among other nodules, its lungs contained one about 3 mm in diameter, which was removed and a piece from it was inoculated into one mouse. The first definite indication of a successful implantation was observed 60 days later, when a small, hard nodule was felt in the subcutaneous tissues of the inoculated mouse. It grew slowly, and when the mouse was killed 98 days after receiving the transplant the tumor measured

7 mm in diameter. It consisted of a hard mass surrounded by an area of hemorrhage. The hard portion of the mass was passed to two other mice, which had small growths 28 days later. The tumor grew progressively in one mouse for 63 days before the animal died. The other tumor, measuring 12 by 10 by 6 mm, was used for passage to four other mice 35 days after implantation, and it grew in all of them. The growth had passed through 13 animal transfers up to December 1, 1936. It grows progressively in all strain A mice but somewhat slower than tumors A or B.

Lung tumor D.—The original tumor-bearing mouse also received the lard-dibenzanthracene injections on April 18 and 26, 1935. It was killed 187 days after the first injection; and, although it was tumor-free at the site of injection, its lungs contained several macroscopic nodules. An isolated nodule about 3 mm in diameter was removed from the lung tissue and a piece was implanted into one mouse. No record was made when the tumor was first noted, but 25 days after inoculation a hard mass 4 mm in diameter was removed from the mouse and used to inoculate three normal mice. It was 38 days after inoculation before definite nodules appeared at the site of inoculation. The history of all three of these second passage animals is presented, because each was used for passage. One of these mice was killed 50 days after inoculation, and a hard mass 7 by 5 mm was removed from its right axilla and used to inoculate three normal animals. One of these failed to grow the tumor; another developed a small nodule 28 days after inoculation, which persisted for 12 more days and then disappeared; the third mouse also developed a nodule 28 days following inoculation, which grew slowly for 1 week and then remained stationary. The mouse died 90 days after inoculation.

The next second-passage mouse was killed 85 days after inoculation. A mass 10 mm in diameter was removed, which consisted of soft tissue surrounded by a hard capsule. Portions of the soft substance were inoculated into four normal mice and grew progressively in all of them. Subsequent serial passages have been carried on from these mice.

The third and last mouse of the second passage was killed 118 days after inoculation. Its mass was 10 by 8 by 8 mm, and it also consisted of soft tissue surrounded by a hard fibrous capsule. The soft material was inoculated into three mice and the hard outer capsule into two mice. Growth occurred in all three which had received the soft material and in one of the two which had received the hard material. These results indicated that both the inner soft encapsulated material and the outer hard layer contained tumor cells.

The four mice of the third passage developed nodules 30 days after inoculation. One tumor was used for passage 85 days after inoculation, when it measured 12 by 8 by 8 mm. The other three

mice had slow-growing tumors and died 110, 117, and 136 days, respectively, after they had been inoculated.

The tumor had undergone 12 serial passages up to December 1, 1936. It grows at the same rate as tumors A and B, requiring about 2 months to cause death.

Lung tumor F.—This tumor arose in the lungs of an experimental strain A animal used by Dr. M. J. Shear (12). The mouse had received a cholesterol pellet subcutaneously containing 0.001 percent of 1,2,5,6-dibenzanthracene on August 14, 1934. It was subjected to autopsy on February 8, 1936. No tumor had developed around the pellet, but a large nodule 4 mm in diameter was found in the lungs. A mouse received an implantation of a piece of the nodule and 45 days later a small nodule appeared at the site of inoculation. The nodule grew slowly, and when the mouse was sacrificed 91 days after inoculation, the nodule measured 10 by 8 mm. Pieces were used to inoculate four mice, in which growths were felt 13 days later. The tumor had undergone seven passages up to December 1, 1936.

Lung tumor G.—The original growth was found in a strain A mouse which had received an intraperitoneal injection of a lard-dibenzanthracene solution on September 25, 1935. It was killed 6 months later and autopsy revealed a large pulmonary growth measuring 8 mm in diameter, growing on the surface of the upper right lobe of the lungs. Pieces were used for the inoculation of two mice. Small masses were felt in these mice 49 days later, and they continued to grow up to the time the mice were killed. One animal was killed 119 days after its inoculation and pieces of the growth, which measured 15 by 10 by 8 mm, were used for passage to four normal mice. Tumors were noted in two of these mice 19 days later; one was killed 57 days after inoculation, when its tumor was 12 mm in diameter. Pieces of this tumor were implanted into five mice, which developed nodules 53 days later. A tumor from one of these, measuring 10 by 8 by 6 mm, was used for passage 88 days after its implantation. The tumor had grown through these three serial passages up to December 1, 1936.

Lung tumor H.—The tumor was found in the lungs of a strain A mouse which had received a subcutaneous injection of 1, 2, 5, 6-dibenzanthracene-choleic acid on May 29, 1935, in the course of an experiment performed by Dr. M. J. Shear (13). No tumor appeared at the site of injection, but when the animal came to autopsy on February 8, 1936, its lungs were full of tumor nodules. One was dissected out and a piece transplanted into a mouse. A palpable nodule was noted 75 days later, which grew very slowly. The mouse was killed 212 days after inoculation and the mass, measuring 12 by 11 by 6 mm, was removed and cut into pieces for transplantation. It was found to consist of soft tissue surrounded by a hard capsule,

similar to the growth found in the second passage of tumor D. The soft material was implanted into five mice and grew in all. Further inoculations have been made from the tumors of these animals. Thus, the tumor had grown through two passages up to December 1, 1936.

Comment.—All the tumors arose in strain A mice and have been propagated in either these mice or strain A backcross mice. Because of the growth energy displayed by tumors A and C, it was thought that they might grow in other strains, but thus far all such efforts have been unsuccessful. All the tumors which have undergone 10 or more serial passages grew slowly in mice of the earlier passages and increased in growth energy in later passages. For the sake of brevity, a summary of the time elapsing between inoculation and the appearance of a palpable nodule in the earlier passages of all tumors is presented in table 1.

TABLE 1.—*Showing the latent period between implantation and the appearance of nodules at the site of inoculation*

Passage number.....	1	2	3	4	5	6	7
Lung tumor	Number of days between the time of inoculation and when a nodule was felt at the site of inoculation						
A.....	46	13	7	7	7	7	7
B.....	22	20	16	7	7	7	7
C.....	60	28	7	7	7	7	7
D.....		38	30	13	7	7	7
F.....	45	13	14	14	14	14	14
G.....	49	19	53				
H.....	75	30					

Table 1 shows that, with the exception of tumor F, all the tumors grew more slowly during the first two passages. While the small size of the piece implanted may have accounted for this fact in the first passage of tumors A and B, it was not responsible for the same results with the others, for the original tumors C, D, F, G, and H were of sufficient size to furnish pieces as large as those usually employed for such inoculations. Furthermore, the amount of tumor tissue used in the second passage of all the growths was as large as that employed in subsequent implantations, and, as seen in table 1, these pieces also grew more slowly than most of the succeeding implants. It is possible that two or three passages were necessary before the lung growths became sufficiently adapted to the subcutaneous tissues to grow with regularity. After this period of adjustment, lung tumors A, B, C, D, and F have assumed, in subsequent passages, a growth rhythm similar to other transplantable mouse tumors. None of the passage tumors possesses a tendency to metastasize to the lungs.

In a previous publication (2) it was shown that tumors growing within the skin of mice served as excellent test objects for the presence

of the hemorrhage-producing factor in *B. coli* filtrates. Lung tumors A, B, C, D, and F of the 21, 14, 11, 10, and 6 passages, respectively, were inoculated into the skin of strain A backcross mice. An intraperitoneal injection of *B. coli* filtrate produced hemorrhage in tumors A, B, C, and D, but not in tumor F.

HISTOLOGICAL STUDIES

Pieces of the original growths of tumors A and B were not available for histological examination, but pieces of the original lung nodules of the other five tumors were fixed and stained. When a passage tumor had been selected for transfer, a piece was removed and cut into two parts; one of these parts was used for inoculation and the other was dropped into a fixative. Thus, material for histological studies was obtained from an area of tumor adjacent to the pieces used for transplantation. In this manner a complete series of sections representing the first 10 passages of each tumor were or will be obtained. When the original pulmonary growth arose in a mouse which had a subcutaneous tumor, pieces of the latter were also fixed. Sections were also prepared from a number of other tumors in the series which were not used in the direct serial passages.

Histological studies of the tumor passages have proved to be of considerable interest and are still in progress. It is apparent that some of the tumors have experienced a change in their histological structure while undergoing animal passage. The following brief description of the findings in tumors A, B, C, D, and F will serve to illustrate this point.

Lung tumor A.—Sections of the original tumor are not available, since four primary nodules were used in the first passage. All sections made from the first to the tenth passage reveal that this growth is apparently a sarcoma. While it would appear that one of the transplanted nodules may have been a metastasis to the lungs, histological studies of the subcutaneous tumor and the transplanted lung growth, as well as the influence of transplantation upon the other tumors to be described next, tend to throw some doubt upon this possibility. Further studies are necessary before any definite conclusion can be reached.

Lung tumor B.—Sections of the first passage of this tumor consist almost exclusively of adenocarcinoma cells. The second passage tumor, however, is a mixed tumor, for both sarcomatous and carcinomatous tissues are seen, while sections of the third passage tumor consist mostly of sarcoma cells. All subsequent passages of the tumor consist of sarcomatous tissue only.

Lung tumor C.—The original lung nodule and the first passage growth are adenocarcinomas; but in view of the change which is

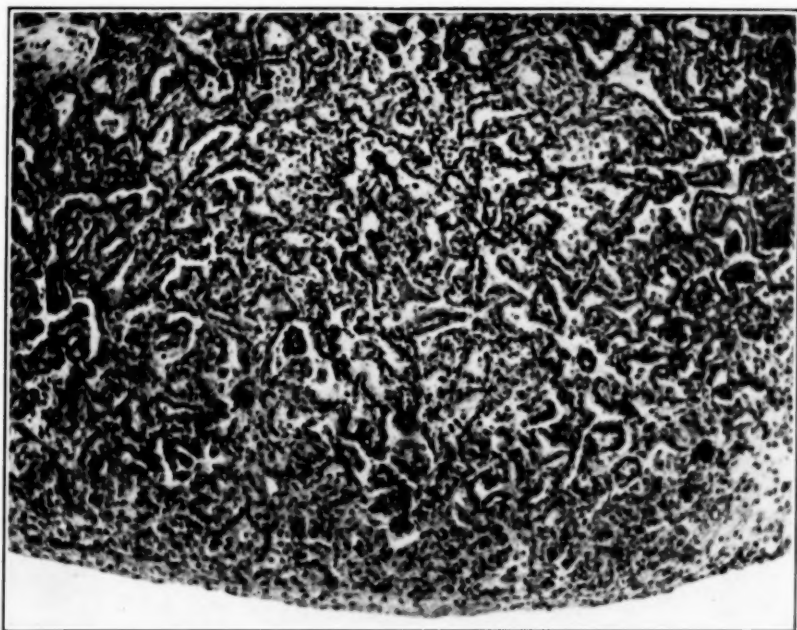


FIGURE 1.—Lung tumor D. Primary growth. $\times 100$.

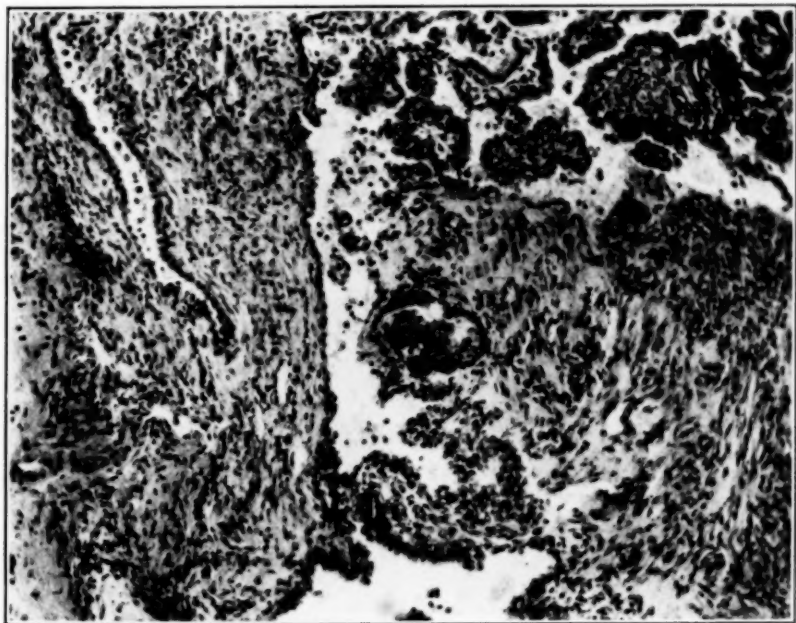


FIGURE 2.—Lung tumor D. First passage, showing portion of fibrous capsule and malignant epithelial cells within and penetrating capsule. $\times 100$.



FIGURE 3.—Lung tumor D. Second passage, showing adenocarcinoma cells. $\times 100$.

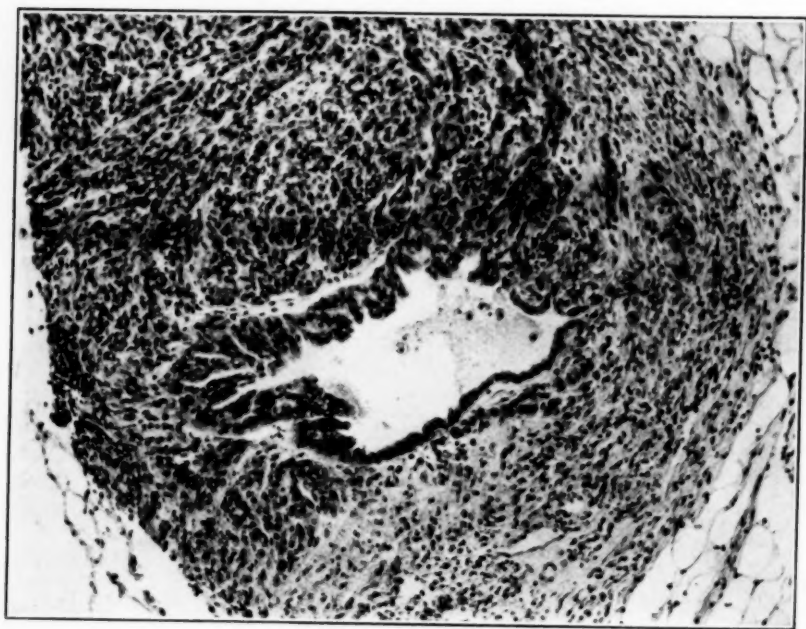


FIGURE 4.—Lung tumor D. Third passage, showing fibrous capsule and malignant epithelial and spindle cells. $\times 100$.

known to have occurred in the tumor, some of the connective tissue cells may be regarded as exhibiting malignant characteristics. The second passage tumor is made up of carcinomatous elements for the most part, but there is also a considerable amount of fibrous tissue present, some of which appears to be sarcomatous. The third passage tumor retains the structure of a transplantable adenocarcinoma, but many of the stroma cells are definitely sarcomatous in appearance. The fourth passage consists almost entirely of sarcoma cells, and the tumor retains its sarcomatous structure in all succeeding passages.

Lung tumor D.—It will be recalled that this tumor arose in an animal which did not have a subcutaneous tumor at the site of injection. The original lung nodule and the first and second passage tumors are adenocarcinomas containing small groups of cells which may be sarcomatous. The third passage tumor is a mixed growth in which areas of carcinomatous tissue are seen among sarcoma cells. From the fourth passage the tumor continues to grow as a sarcoma. Photomicrographs of the original lung nodule and the first three passages are presented in order to illustrate the changes occurring in the various passages.

Lung tumor F.—The primary lung tumor is an adenocarcinoma and the transplanted tumors consist of carcinomatous elements in eight subsequent passages.

COMMENT CONCERNING HISTOLOGICAL STUDIES

The prevailing malignant cell in the primary growths of tumors B, C, and D were of epithelial origin, and during the earlier passages of these tumors the carcinomatous elements remained predominant. In succeeding animal passages, however, sarcomatous elements became predominant in all three tumors. This phenomenon has been known to occur in other transplantable tumors. Haaland (8), in 1908, published an exhaustive study of the changes he observed in transplantable mouse tumors. One of these arose as a carcinoma and histological studies of the primary growth convinced him "that there can be no question of a primary mixed tumor in the usual sense of the word." After a series of animal passages the tumor changed to a pure sarcoma; and, after careful examination of all histological evidence, Haaland arrived at the conclusion that "all evidence seems to speak for a gradual process by which apparently normal connective tissue cells evolve into sarcomatous elements." Studies of another transplantable carcinoma which exhibited the same phenomenon led Haaland to conclude that "the primary growth already shows stroma cells with sarcomatous properties."

Whether the primary lung nodules in the present studies arose as mixed tumors or whether the supporting connective tissue cells be-

came sarcomatous while in passage animals, or whether the malignant epithelial cells changed in appearance is as yet unknown. Histological studies suggest, however, that among the predominant carcinomatous tissue of the primary growths were also some sarcoma cells. It is known that 1, 2, 5, 6-dibenzanthracene evokes malignant changes in a variety of tissues. In view of this knowledge, it is possible that the carcinogenic compound, or a derivative, came into contact with lung tissue, where it produced malignant changes in both the epithelial tissues and the stroma cells. If the subcutaneous tissues of the passage mice were better soil for growth of the sarcomatous elements of the transplanted tumors, it seems that they should overgrow the carcinomatous tissue of the primary growth. However, it is not clear why carcinoma cells were predominant in the earlier passages, and, thus far, it is not known whether sarcoma cells are able to overgrow the carcinoma cells in the first or second passages of induced lung growths if the tumor-bearing mice are kept until they succumb to tumor growth. Experiments designed to answer this question are now in progress.

It is believed that animal passage of other induced lung tumors will also reveal the change of carcinomatous to sarcomatous structure. Hence, the induced growths offer an opportunity for histological investigation of the phenomenon without waiting for its fortuitous occurrence.

Lung tumor F, which arose as an adenocarcinoma, maintained its carcinomatous appearance through eight animal passages. It should be mentioned that tumors A, B, C, and D arose in strain A mice which were less than 9 months old and were, in all probability, induced by injections of the carcinogenic agent. Lung tumor F, however, was found in a strain A mouse which was at least 20 months old, and Bittner (6) has reported that the majority of strain A mice develop spontaneous pulmonary tumors before they attain this age. It is possible that tumor F arose as a spontaneous tumor, and it should be of interest to observe whether it also changes into a pure sarcoma.

Transplantations of spontaneous pulmonary tumors are in progress to ascertain whether they will exhibit the same phenomenon.

SUMMARY

Seven pulmonary tumors arising in strain A mice which had received 1, 2, 5, 6-dibenzanthracene parenterally have undergone from 3 to 23 serial passages in the subcutaneous tissues of normal mice. Three of the tumors consisted of carcinomatous elements mostly in the primary tumor as well as in the earlier passages, and all three have changed into sarcomas in subsequent passages. One other tumor has retained its carcinomatous structure through eight animal passages.

It is suggested that the three tumors exhibiting a change in their histological appearance arose as mixed tumors induced by the direct action of a carcinogenic agent upon both epithelial and connective tissue elements in the lungs.

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MEASUREMENTS OF ULTRAVIOLET RADIATION AND ILLUMINATION IN AMERICAN CITIES, 1931 TO 1933

During the years 1931 to 1933 a survey of atmospheric pollution was made by the United States Public Health Service in Baltimore, Boston, Buffalo, Chicago, Cleveland, Detroit, Los Angeles, New Orleans, New York, Philadelphia, Pittsburgh, St. Louis, San Francisco, and Washington. In this survey the atmospheric pollution due to smoke was recorded, samples of the dust in the air were collected and analyzed, and various meteorological factors, such as relative humidity and wind velocity, were measured and recorded. The methods of the study and the principal results have been reported in Public Health Bulletin No. 224.

During the survey, measurements were made in each city of the ultraviolet radiation and of the illumination at 9 a. m., noon, and 3 p. m. These measurements were not given in the original report of the study, as it was found difficult to correlate them with the atmospheric pollution. The measurements, however, represent a wide geographical distribution of these factors, covering a large part of the United States, and are of interest in themselves. They have therefore been published in a separate report, Public Health Bulletin No. 233. The measurements recoded in this Bulletin have been divided into those for clear and cloudy skies, and for cities north of latitude 37° and those south of latitude 35°. Monthly averages were determined

for these four groups for the ultraviolet radiation and for the illumination. Average ratios of the ultraviolet radiation to the illumination have also been calculated.

For the northern cities the average intensity, on a horizontal surface under a clear sky at noon, of the antirachitic ultraviolet, that is, of the ultraviolet less than 313 millicrons in wave length, was found to vary from 8.4 microwatts per square centimeter in January to 85.1 microwatts per square centimeter in May. At 9 a. m. it varied from 0.4 in January to 39.1 in May. The corresponding averages at 3 p. m. were 1.7 and 41.4. The average intensity of the illumination at noon in January was 3,060 foot-candles; in May, 8,540 foot-candles. The corresponding values at 9 a. m. were 1,200 and 6,080 foot-candles, and at 3 p. m., 1,820 and 5,700 foot-candles. The average intensity, both of the ultraviolet radiation and the illumination, was, in general, for the same time of the year, higher for the southern cities than for the northern. Under clear skies, this difference was much greater in the winter than in the summer.

For the northern cities, the highest value of the illumination was 10,200 foot-candles at noon in Cleveland on July 9, 1932. The corresponding value of the antirachitic ultraviolet radiation was 85.0 microwatts per square centimeter. The highest value of the antirachitic ultraviolet was 86.5 microwatts per square centimeter in Washington on May 20, 1932. The corresponding value of the illumination was 9,000 foot-candles. The average antirachitic ultraviolet radiation per foot-candle was found to be 9.44 thousandths of a microwatt in June and 2.71 thousandths of a microwatt in January.

The two outstanding features of the study appear to be, first its general nature, the measurements having been made in 14 of the principal cities of the country for different seasons of the year, and, second, the determination of the ratio of the antirachitic ultraviolet radiation to the illumination. The latter is probably the most interesting and novel contribution of the present study, since, if the value of the illumination is known, the approximate amount of antirachitic ultraviolet radiation can be determined from the value of this ratio given in table 5 and plotted in figure 7 of the Bulletin.

PUBLIC HEALTH SERVICE PUBLICATIONS

A List of Publications Issued During the Period July-December 1936

There is printed herewith a list of publications of the United States Public Health Service issued during the period July-December 1936.

The most important articles that appear each week in the PUBLIC HEALTH REPORTS are reprinted in pamphlet form, making possible a wider and more economical distribution of information that is of

especial value and interest to public health workers and the general public.

All of the publications listed below except those marked with an asterisk (*) are available for free distribution and as long as the supply lasts may be obtained by addressing the Surgeon General, United States Public Health Service, Washington, D. C. Those publications marked with an asterisk are not available for free distribution but, unless stated to be "out of print", may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D. C., *at the prices noted*. (No remittances should be sent to the Public Health Service.)

Periodicals

- *Public Health Reports (weekly), July-December, vol. 51, nos. 27-52, pages 871 to 1,815. 5 cents a copy.
- *Venereal Disease Information (monthly), July-December, vol. 17, nos. 7 to 12, pages 177 to 378. 5 cents a copy.

Reprints From the Public Health Reports

- 1758. History and frequency of typhoid fever immunizations and cases in 9,000 families. Based on Nation-wide periodic canvasses, 1928-31. By Selwyn D. Collins. July 10, 1936. 30 pages.
- 1759. Post-mortem findings in fatalities due to the use of the arsphenamine group. A review of 44 autopsies. By S. S. Cook. July 10, 1936. 9 pages.
- 1760. Important causes of sickness and death. By Rollo H. Britten. July 17, 1936. 23 pages.
- 1761. Communicable diseases and activities for their control in the Brunswick-Greenville area. Brunswick-Greenville health administration studies no. 7. By J. O. Dean and Elliott H. Pennell. July 24, 1936. 23 pages.
- 1762. Report on market-milk supplies of urban communities. Compliance of the market-milk supplies of urban communities with the Grade A pasteurized and Grade A raw milk requirements of the Public Health Service Milk Ordinance and Code (as shown by ratings of 90 percent or more reported by the State milk-sanitation authorities during the period July 1, 1934, to June 30, 1936). August 14, 1936. 5 pages.
- 1763. Mortality from automobile accidents among children in different geographic regions of the United States, 1930. Studies on the fatal accidents of childhood no. 1. By William M. Gafafer. August 7, 1936. 8 pages.
- 1764. Extent of rural health service in the United States, December 31, 1931, to December 31, 1935. August 14, 1936. 17 pages.
- 1765. An estimate of the monetary value to industry of plant medical and safety services. By Dean K. Brundage. August 21, 1936. 15 pages.
- 1766. Directory of whole-time county health officers, 1936. August 21, 1936. 11 pages.
- 1767. Time changes in the relative mortality from automobile accidents among children in different geographic regions of the United States, 1925 to 1932. Studies on the fatal accidents of childhood no. 2. By William M. Gafafer. August 28, 1936. 9 pages.

1768. Tabulation of health department services. Report of committee on records and reports to State and Territorial health officers and the United States Public Health Service in thirty-fourth annual conference, Washington, D. C. April 13-14, 1936. September 4, 1936. 16 pages.
1769. Acute response of guinea pigs to vapors of some new commercial organic compounds. XII. Normal butyl acetate. By R. R. Sayers, H. H. Schrenk, and F. A. Patty. September 4, 1936. 8 pages.
1770. The official United States and international unit for standardizing gas gangrene antitoxin (histolyticus). By Ida A. Bengtson and Sarah E. Stewart. September 11, 1936. 10 pages.
1771. Public Health Service publications. A list of publications issued during the period January-June 1936. September 11, 1936. 4 pages.
1772. Time changes in the relative mortality from accidental burns among children in different geographic regions of the United States, 1925-32. Studies on the fatal accidents of childhood no. 3. By William M. Gafafer. September 18, 1936. 9 pages.
1773. Acute response of guinea pigs to vapors of some new commercial organic compounds. XIII. Methyl formate. By H. H. Schrenk, W. P. Yant, John Chornyak, and F. A. Patty. September 25, 1936. 9 pages.
1774. Studies of sewage purification. V. Oxidation of sewage by activated sludge. By P. D. McNamee. July 31, 1936. 11 pages.
1775. Resistance of various strains of *E. typhi* and *Coli aerogenes* to chlorine and chloramine. By Lucy S. Heathman, G. O. Pierce, and Paul Kabler. October 2, 1936. 21 pages.
1776. Audiometric studies on school children. I. The consistency and significance of tests made with a 4-A audiometer. By Antonio Ciocco. October 9, 1936. 15 pages.
1777. Lysine and malignant growth. I. The amino acid lysine as a factor controlling the growth rate of a typical neoplasm. By Carl Voegtlin and J. W. Thompson. October 16, 1936. 8 pages.
1778. Lysine and malignant growth. II. The effect on malignant growth of a gliadin diet. By Carl Voegtlin and Mary E. Maver. October 16, 1936. 9 pages.
1779. State and insular health authorities, 1936. Directory, with data as to appropriations and publications. October 23, 1936. 19 pages.
1780. The selenium problem in relation to public health. A preliminary survey to determine the possibility of selenium intoxication in the rural population living on seleniferous soil. By Maurice I. Smith, K. W. Franke, and B. B. Westfall. October 30, 1936. 10 pages; 1 plate.
1781. Plague eradication measures on the Island of Maui, Territory of Hawaii. By A. L. Dopmeyer. November 6, 1936. 24 pages; 4 plates.
1782. The efficiency of rapid sand filters in removing the cysts of the amoebic dysentery organisms from water. By John R. Baylis, Oscar Gullans, and Bertha Kaplan Spector. November 13, 1936. 9 pages; 1 plate.
1783. City health officers, 1936. Directory of those in cities of 10,000 or more population. November 13, 1936. 18 pages.
1784. Audiometric studies on school children. II. Types of audiometric curves. By Antonio Ciocco. November 20, 1936. 13 pages.
1785. The evaluation of health services. By Joseph W. Mountin. November 27, 1936. 8 pages.
1786. Time changes in the mortality from accidental mechanical suffocation among infants under 1 year old in different geographic regions of the United States, 1925-32. Studies on the fatal accidents of childhood no. 4. By William M. Gafafer. November 27, 1936. 6 pages.

1787. The physiological response of peritoneal tissue to certain industrial and pure mineral dusts. By John W. Miller and R. R. Sayers. December 4, 1936. 13 pages; 10 plates.
1788. Duration and cost of Federal compensation cases with disease as a complicating factor. By William M. Gafafer. December 11, 1936. 12 pages.
1789. History and frequency of diphtheria immunizations and cases in 9,000 families. Based on Nation-wide periodic canvasses, 1928-31. By Selwyn D. Collins. December 18, 1936. 38 pages.
1790. An organization for promoting mental hospital services in the United States and Canada. By Walter L. Treadway. December 25, 1936. 9 pages.

Supplements to the Public Health Reports

118. Experiments on the tolerance and addiction potentialities of dihydrodeoxymorphine-D ("desomorphine"). By Nathan B. Eddy and C. K. Himmelsbach. 1936. 33 pages.
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228. Epidemiological studies of poliomyelitis in Kentucky. By L. L. Lumsden. August 1936. 56 pages.
229. Skin hazards in American industry. Part II. By Louis Schwartz. September 1936. 80 pages; 38 plates.
230. Experience of the health department in 811 counties, 1908-34. By Joseph W. Mountin, Elliott H. Pennell, and E. Evelyn Flook. October 1936. 40 pages.
231. Studies of heart disease mortality. An analysis of the accuracy of deaths recorded as being due to heart disease in Washington, D. C., during 1932, with a discussion of the defects of the present method of tabulating deaths, and suggestions for a new system based upon etiological factors. By O. F. Hedley. October 1936. 49 pages.
- *232. Review of plague in Seattle (1907) and subsequent rat and flea surveys. By L. D. Fricks. November 1936. 28 pages. 10 cents.

National Institute of Health Bulletin

168. The experimental pathology and pathologic histology produced by the toxin of *Vibrio septique* in animals. By Joseph G. Pasternack and Ida A. Bengtson. August 1936. 46 pages; 13 plates.

Unnumbered Publication

- Index to Public Health Reports, vol. 51, part 1 (January-June 1936). 1936. 24 pages.

Reprints From Venereal Disease Information

- *54. Recommendations for a venereal disease control program in State and local health departments. By R. A. Vonderlehr, Herman N. Bundesen, Joseph Earle Moore, N. A. Nelson, P. S. Pelouze, William F. Snow, John H. Stokes, U. J. Wile, and Lida J. Usilton. Vol. 17, no. 1. 16 pages. 5 cents.
55. Cardiovascular syphilis. Cooperative clinical studies in the treatment of syphilis. By Harold N. Cole, Lida J. Usilton, Joseph Earle Moore, Paul A. O'Leary, John H. Stokes, Udo J. Wile, Thomas Parran, and R. A. Vonderlehr. Vol. 17, no. 4. 28 pages.

- *56. Venereal disease control programs of the State departments of health. Vol. 17, no. 7. 33 pages. 5 cents.
57. Syphilis in a large industrial organization. By G. H. Gehrman. Vol. 17, no. 8. 3 pages.
58. The occurrence in leprosy of positive serodiagnostic tests for syphilis. By H. H. Hazen, Thomas Parran, Arthur H. Sanford, F. E. Senear, Walter M. Simpson, and R. A. Vonderlehr. Vol. 17, no. 9. 7 pages.
59. Untreated syphilis in the male Negro. By R. A. Vonderlehr, Taliaferro Clark, O. C. Wenger, and J. R. Heller. Vol. 17, no. 9. 6 pages.
- *60. The control of syphilis. A critical examination of some of its problems. By John H. Stokes. Vol. 17, no. 11. 27 pages. 5 cents.

Supplements to Venereal Disease Information

- *2. The control of syphilis. A symposium. 70 pages. 10 cents.
- *3. Proceedings of Conference on Venereal Disease Control Work, Washington, D. C., December 28-30, 1936. 154 pages. 15 cents.

DEATHS DURING WEEK ENDED MARCH 6, 1937

(From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)

	Week ended Mar. 6, 1937	Correspond- ing week, 1936
Data from 86 large cities in the United States:		
Total deaths.....	9,612	10,136
Average for 3 prior years.....	9,738	
Total deaths, first 9 weeks of year.....	95,142	88,265
Deaths under 1 year of age.....	620	600
Average for 3 prior years.....	646	
Deaths under 1 year of age, first 9 weeks of year.....	5,803	5,175
Data from industrial insurance companies:		
Policies in force.....	69,355,137	68,009,308
Number of death claims.....	16,894	14,637
Death claims per 1,000 policies in force, annual rate.....	12.7	11.2
Death claims per 1,000 policies, first 9 weeks of year, annual rate.....	11.6	11.0

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Mar. 13, 1937, and Mar. 14, 1936

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Mar. 13, 1937	Week ended Mar. 14, 1936	Week ended Mar. 13, 1937	Week ended Mar. 14, 1936	Week ended Mar. 13, 1937	Week ended Mar. 14, 1936	Week ended Mar. 13, 1937	Week ended Mar. 14, 1936
New England States:								
Maine.....		3	116	8	15	238	0	1
New Hampshire.....		1			11	34	0	0
Vermont.....					1	502	0	0
Massachusetts.....		3			810	986	5	6
Rhode Island.....	1			4	253	82	1	1
Connecticut.....	2	2	42	25	625	88	0	2
Middle Atlantic States:								
New York.....	44	33	147	166	577	2,444	11	28
New Jersey.....	10	16	39	97	2,015	226	1	9
Pennsylvania.....	47	40			299	865	6	17
East North Central States:								
Ohio.....	17	26	147	130	137	389	14	13
Indiana.....	15	19	91	36	10	14	4	2
Illinois.....	36	35	75	31	49	52	5	19
Michigan.....	14	4	3	5	64	80	2	0
Wisconsin.....	3	2	91	67	22	109	2	1
West North Central States:								
Minnesota.....	16	4	2		38	384	1	3
Iowa.....	4	14	4	7	4	4	1	5
Missouri.....	18	16	195	837	13	13	3	10
North Dakota.....	4		4	4	3	1	0	0
South Dakota.....	2	4			4	5	0	0
Nebraska.....	3	9	23	12	8	25	1	2
Kansas.....	13	13	43	172	10		2	3
South Atlantic States:								
Delaware.....			1		90	61	1	0
Maryland ¹	7	2	64	74	659	199	5	13
District of Columbia.....	7	25	14	3	106	63	3	2
Virginia.....	12	16		2,230	241	220	11	33
West Virginia.....	6	13	353	192	7	15	6	7
North Carolina.....	18	9	278	365	120	85	7	4
South Carolina.....	7	5	1,602	873	44	37	2	13
Georgia ¹	13	9	1,125	1,058			2	15
Florida.....	7	12	20	27	3	4	3	3
East South Central States:								
Kentucky.....	14	17	179	93	81	190	25	40
Tennessee.....	3	17	452	416	8	170	4	11
Alabama.....	9	17	2,019	2,224	33	22	20	2
Mississippi ¹		9					5	3

See footnotes at end of table.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Mar. 13, 1937, and Mar. 14, 1936—Continued

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Mar. 13, 1937	Week ended Mar. 14, 1936	Week ended Mar. 13, 1937	Week ended Mar. 14, 1936	Week ended Mar. 13, 1937	Week ended Mar. 14, 1936	Week ended Mar. 13, 1937	Week ended Mar. 14, 1936
West South Central States:								
Arkansas.....	2	8	260	383	13	20	3	3
Louisiana.....	10	16	366	111	7	68	1	0
Oklahoma.....	5	8	337	343	25	3	10	5
Texas.....	54	44	2,069	580	420	475	10	11
Mountain States:								
Montana.....	2	6	27	32	46	13	0	0
Idaho.....	1		5	6	29	8	0	0
Wyoming.....		4			4	4	0	1
Colorado.....	2	3			6	23	2	2
New Mexico.....	3	5	81	21	100	32	0	2
Arizona.....	2	6	73	316	181	57	0	1
Utah.....					23	5	0	1
Pacific States:								
Washington.....	3	1	2	5	29	257	2	6
Oregon.....			34	218	7	385	1	1
California.....	14	35	818	1,022	96	2,676	11	9
Total.....	450	536	11,131	12,393	7,342	11,626	210	312
First 10 weeks of year.....	5,506	6,302	235,680	74,364	52,676	77,758	1,628	2,213

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Mar. 13, 1937	Week ended Mar. 14, 1936	Week ended Mar. 13, 1937	Week ended Mar. 14, 1936	Week ended Mar. 13, 1937	Week ended Mar. 14, 1936	Week ended Mar. 13, 1937	Week ended Mar. 14, 1936
New England States:								
Maine.....	0	0	17	12	0	0	0	0
New Hampshire.....	0	1	19	11	0	0	1	0
Vermont.....	0	0	6	20	0	0	0	0
Massachusetts.....	0	0	256	301	0	0	2	2
Rhode Island.....	0	0	54	28	0	0	0	0
Connecticut.....	0	1	112	150	0	0	1	1
Middle Atlantic States:								
New York.....	0	3	1,020	1,326	0	0	6	16
New Jersey.....	0	0	232	653	0	0	2	1
Pennsylvania.....	0	1	749	533	0	0	6	6
East North Central States:								
Ohio.....	0	0	370	445	2	0	8	2
Indiana.....	0	0	238	286	0	4	0	1
Illinois.....	2	3	888	882	24	13	6	8
Michigan.....	0	3	1,004	384	1	2	2	3
Wisconsin.....	0	0	379	594	14	15	2	0
West North Central States:								
Minnesota.....	0	0	161	435	7	1	1	1
Iowa.....	1	0	370	233	38	11	1	1
Missouri.....	0	1	269	216	70	8	6	1
North Dakota.....	0	0	53	66	3	2	0	0
South Dakota.....	0	0	87	73	2	35	0	0
Nebraska.....	0	1	57	189	9	32	0	0
Kansas.....	0	1	492	347	32	79	2	1
South Atlantic States:								
Delaware.....	0	0	10	4	0	0	0	0
Maryland.....	0	0	31	87	0	0	2	1
District of Columbia.....	0	0	9	24	0	0	0	0
Virginia.....	0	0	31	57	0	0	3	5
West Virginia.....	0	0	42	75	0	0	3	1
North Carolina.....	1	0	28	46	0	0	0	4
South Carolina.....	0	2	11	1	0	4	3	0
Georgia.....	0	0	22	34	0	0	3	0
Florida.....	0	0	8	10	0	0	5	0

See footnotes at end of table.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Mar. 13, 1937, and Mar. 14, 1936—Continued

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Mar. 13, 1937	Week ended Mar. 14, 1936	Week ended Mar. 13, 1937	Week ended Mar. 14, 1936	Week ended Mar. 13, 1937	Week ended Mar. 14, 1936	Week ended Mar. 13, 1937	Week ended Mar. 14, 1936
East South Central States:								
Kentucky.....	1	0	46	50	0	0	5	2
Tennessee.....	0	0	18	50	0	0	3	3
Alabama.....	2	1	17	17	0	0	3	0
Mississippi ¹	5	0	13	16	0	0	0	3
West South Central States:								
Arkansas.....	1	1	12	15	5	2	2	2
Louisiana.....	0	0	9	14	0	7	13	9
Oklahoma ²	0	0	34	25	3	1	4	2
Texas ³	4	2	112	94	1	5	9	3
Mountain States:								
Montana.....	0	0	36	175	18	9	0	1
Idaho.....	0	0	19	38	1	3	0	1
Wyoming.....	0	0	19	159	2	0	0	0
Colorado.....	0	0	42	158	0	6	0	0
New Mexico.....	0	0	30	74	0	0	0	2
Arizona.....	0	0	4	20	0	1	0	1
Utah ⁴	0	0	16	102	0	1	0	0
Pacific States:								
Washington.....	0	1	29	85	6	41	5	2
Oregon.....	0	0	24	25	36	1	3	0
California ⁵	1	4	234	390	11	0	4	5
Total.....	18	26	7,739	9,018	285	283	116	91
First 10 weeks of year.....	221	184	65,463	78,017	2,942	2,173	1,101	949

¹ New York City only.

² Week ended earlier than Saturday.

³ Typhus fever, week ended Mar. 13, 1937, 18 cases, as follows: Georgia, 14; Texas, 2; California, 2.

⁴ Exclusive of Oklahoma City and Tulsa.

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week:

State	Menin- gococ- cus menin- gitis	diph- theria	Influen- za	Mala- ria	Men- sles	Pei- lagra	Polio- mye- litis	Scarlet fever	Small- pox	Ty- phoid fever
<i>February 1937</i>										
California.....	54	123	28,179	3	441	6	3	1,189	67	11
District of Columbia.....	9	60	147		194		0	75	0	2
Indiana.....	12	36	819		36		2	738	17	1
Iowa.....	6	17	587		11		2	1,166	140	1
Maine.....		5	2,929		54		0	101	0	2
New Jersey.....	16	38	408		3,847		1	659	0	9
Vermont.....	1	1	69		5		0	114	0	0
West Virginia.....	33	51	4,079		50		1	206	4	6

February 1937

Botulism:	Cases	German measles—	Cases	Tetanus:	Cases
California.....	6	Continued.		California.....	4
Chickenpox:		New Jersey....	126	Trachoma:	
California.....	3,741	Vermont.....	8	California.....	27
Indiana.....	380	Granuloma, cocci-		Trichinosis:	
Iowa.....	239	dioidal:		California.....	3
Maine.....	214	California.....	2	New Jersey....	4
New Jersey....	1,772	Jaundice, epidemic:		Tularaemia:	
Vermont.....	186	California.....	2	California.....	1
West Virginia..	210	Leprosy:		District of Co-	
Dysentery:		California.....	1	lumbia.....	8
California.....		Mumps:		New Jersey....	1
(amoebic).....	3	California.....	2,874	Undulant fever:	
California.....		Indiana.....	85	California.....	8
(bacillary)....	1	Iowa.....	124	Iowa.....	6
Iowa (amoebic).....	1	Maine.....	406	Maine.....	3
New Jersey....	1	New Jersey....	932	New Jersey....	4
(bacillary)....	2	Vermont.....	150	Vermont.....	5
Encephalitis, epi-		West Virginia..	71	Vincent's infection:	
demic or lethargic:		Ophthalmia neonatorum:		Maine.....	5
California.....	2	California.....	1	Whooping cough:	
District of Columbia.....	1	New Jersey....	9	California.....	1,489
New Jersey....	1	Paratyphoid fever:		District of Columbia.....	60
Food poisoning:		California.....	2	Indiana.....	209
California.....	12	Rabies in animals:		Iowa.....	94
German measles:		California.....	156	Maine.....	152
California.....	118	Indiana.....	30	New Jersey....	595
Iowa.....	242	New Jersey....	16	Vermont.....	121
Maine.....	5	West Virginia..	5	West Virginia..	306
		Septic sore throat:			
		California.....	9		
		Indiana.....	1		

CASES OF VENEREAL DISEASES REPORTED FOR JANUARY 1937

These reports are published monthly for the information of health officers in order to furnish current data as to the prevalence of the venereal diseases. The figures are taken from reports received from State and city health officers. They are preliminary and are therefore subject to correction. It is hoped that the publication of these reports will stimulate more complete reporting of these diseases.

Reports from States

	Syphilis		Gonorrhea	
	Cases reported during month	Monthly case rates per 10,000 population	Cases reported during month	Monthly case rates per 10,000 population
Alabama.....	976	3.44	435	1.33
Arizona.....	36	.93	102	2.64
Arkansas ¹	182	.91	142	.71
California.....	1,394	2.47	1,478	2.62
Colorado ¹				
Connecticut.....	221	1.29	138	.80
Delaware.....	146	5.70	41	1.60
District of Columbia.....	158	2.66	174	2.93
Florida.....	401	2.48	115	.71
Georgia.....	1,379	4.12	565	1.69
Idaho.....	17	.35	25	.82
Illinois.....	1,533	1.96	1,477	1.89
Indiana.....	230	.67	63	.18
Iowa ¹	131	.62	132	.62
Kansas.....	105	.67	54	.29
Kentucky ¹				
Louisiana.....	169	.80	134	.63
Maine ¹	54	.64	59	.70
Maryland.....	625	3.74	215	1.29
Massachusetts.....	510	1.17	618	1.41
Michigan.....	527	1.13	550	1.18
Minnesota.....	213	.81	297	1.13

See footnotes at end of table.

Reports from States—Continued

	Syphilis		Gonorrhea	
	Cases reported during month	Monthly case rates per 10,000 population	Cases reported during month	Monthly case rates per 10,000 population
Mississippi.....	1,831	9.34	2,318	11.82
Missouri.....	314	.80	202	.62
Montana ¹	59	1.11	43	.81
Nebraska.....	42	.31	71	.82
Nevada ¹				
New Hampshire.....	4	.08	9	.18
New Jersey.....	696	1.62	287	.67
New Mexico.....	39	.97	51	1.27
New York.....	7,109	5.52	1,794	1.39
North Carolina.....	1,873	6.48	589	1.72
North Dakota.....	33	.47	38	.54
Ohio ¹	1,051	1.57	341	.81
Oklahoma ¹				
Oregon.....	100	.99	183	1.82
Pennsylvania ¹	379	.38	170	.17
Rhode Island.....	86	1.26	48	.70
South Carolina.....	421	2.09	517	2.57
South Dakota.....	102	1.51	31	.46
Tennessee.....	723	2.49	355	1.22
Texas.....	407	.67	159	.26
Utah ¹	23	.61	25	.66
Vermont.....	644	2.44	372	1.41
Virginia.....	284	1.74	398	2.44
Washington.....	210	1.16	108	.59
West Virginia.....	22	.08	89	.31
Wisconsin ¹				
Wyoming ¹				
Total.....	25,459	2.12	15,012	1.25

Reports from cities of 200,000 population or over

Akron, Ohio.....	23	0.85	19	0.70
Atlanta, Ga. ¹				
Baltimore, Md.....	356	4.31	129	1.56
Birmingham, Ala.....	139	4.92	69	2.44
Boston, Mass.....	203	2.57	171	2.16
Buffalo, N. Y.....	44	.74	48	.81
Chicago, Ill.....	825	2.31	988	2.77
Cincinnati, Ohio ¹				
Cleveland, Ohio.....	179	1.92	83	.89
Columbus, Ohio.....	24	.79	9	.29
Dallas, Tex.....	101	3.40	65	2.24
Dayton, Ohio ¹				
Denver, Colo.....	31	1.04	38	1.28
Detroit, Mich. ¹				
Houston, Tex. ¹	121	3.61	49	1.46
Indianapolis, Ind.....	21	.56	36	.95
Jersey City, N. J. ¹				
Kansas City, Mo.....	52	1.23	10	.24
Los Angeles, Calif. ¹				
Louisville, Ky. ¹				
Memphis, Tenn.....	205	7.68	66	2.47
Milwaukee, Wis. ¹				
Minneapolis, Minn.....	69	1.42	149	3.06
Newark, N. J.....	221	4.77	83	1.79
New Orleans, La. ¹				
New York, N. Y.....	5,816	7.96	1,281	1.75
Oakland, Calif.....	17	.56	30	.99
Omaha, Nebr. ¹				
Philadelphia, Pa.....	205	1.03	56	.28
Pittsburgh, Pa. ¹				
Portland, Oreg. ¹				
Providence, R. I. ¹				
Rochester, N. Y.....	49	1.45	36	1.07
St. Louis, Mo.....	150	1.79	97	1.16
St. Paul, Minn.....	30	1.06	35	1.24
San Antonio, Tex. ¹				
San Francisco, Calif.....	115	1.71	136	2.03
Seattle, Wash.....	139	3.66	151	3.98
Syracuse, N. Y.....	67	3.07	36	1.65
Toledo, Ohio.....	36	1.18	19	.62
Washington, D. C. ¹	158	2.66	174	2.93

¹ Incomplete.² No report for current month.³ Not reporting.⁴ Includes only those cases that enter the clinics conducted by the State department of health.⁵ Only cases of syphilis in the infectious stage are reported.⁶ Reported by the Jefferson Davis Hospital. Physicians are not required to report venereal diseases.⁷ Reported by the Social Hygiene Clinic.

WEEKLY REPORTS FROM CITIES

City reports for week ended Mar. 6, 1937

This table summarizes the reports received weekly from a selected list of 140 cities for the purpose of showing a cross section of the current urban incidence of the communicable diseases listed in the table. Weekly reports are received from about 700 cities, from which the data are tabulated and filed for reference.

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Small-pox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Data for 90 cities:	252	764	140	6,076	1,000	2,557	20	419	21	1,397	-----
5-year average	131	1,088	201	2,515	1,065	2,552	59	467	11	1,477	-----
Current week											-----
Maine:											
Portland	0	1	0	0	2	1	0	1	0	3	23
New Hampshire:											
Concord	0	-----	0	0	2	1	0	0	0	0	9
Manchester	0	-----	9	0	5	0	0	2	0	0	51
Nashua	0	-----	-----	0	1	2	0	-----	0	0	-----
Vermont:											
Barre	0	-----	0	0	0	0	0	2	0	9	3
Burlington	0	-----	0	0	0	0	0	0	0	1	7
Rutland	0	-----	0	0	1	0	0	0	1	0	5
Massachusetts:											
Boston	1	-----	3	2	38	44	0	5	0	100	238
Fall River	0	-----	0	14	5	6	0	1	0	4	34
Springfield	0	-----	0	15	4	6	0	1	0	7	46
Worcester	0	-----	1	192	13	4	0	1	0	20	71
Rhode Island:											
Pawtucket	0	-----	0	8	0	3	0	0	0	0	25
Providence	0	1	1	221	16	27	0	2	2	27	95
Connecticut:											
Bridgeport	0	1	0	23	4	24	0	0	0	3	33
Hartford	0	-----	0	5	15	7	0	1	0	5	55
New Haven	0	-----	0	1	1	6	0	0	0	1	44
New York:											
Buffalo	0	-----	2	79	11	18	0	6	0	40	167
New York	38	56	13	173	228	430	0	110	1	85	1,750
Rochester	0	-----	0	2	4	3	0	1	0	15	72
Syracuse	0	-----	1	38	11	56	0	1	0	32	53
New Jersey:											
Camden	0	2	2	0	4	3	0	1	0	3	34
Newark	0	3	0	763	17	22	0	10	0	19	113
Trenton	0	-----	2	3	4	19	0	0	0	9	36
Pennsylvania:											
Philadelphia	5	12	8	16	52	212	0	35	0	86	546
Pittsburgh	3	10	5	26	25	59	0	9	0	19	184
Reading	0	-----	0	2	4	15	0	1	0	14	24
Scranton	0	-----	-----	0	-----	28	0	-----	0	0	-----
Ohio:											
Cincinnati	0	4	3	0	13	41	0	7	0	11	162
Cleveland	2	50	8	17	24	56	0	11	0	70	213
Columbus	1	4	4	0	6	11	0	4	0	9	91
Toledo	0	4	4	38	8	7	0	3	0	28	84
Indiana:											
Anderson	0	-----	0	0	4	8	0	0	0	0	8
Fort Wayne	1	-----	2	6	5	3	0	3	0	1	37
Indianapolis	1	-----	7	6	17	34	0	2	0	34	111
Muncie	0	2	2	0	1	9	0	0	0	0	-----
South Bend	0	-----	0	0	4	2	0	1	0	2	26
Terre Haute	0	-----	0	0	0	1	0	0	0	1	28
Illinois:											
Alton	0	-----	0	0	0	4	0	0	0	0	8
Chicago	16	20	6	17	66	282	0	43	2	84	786
Elgin	0	-----	0	0	3	1	0	0	0	4	11
Moline	0	-----	1	0	0	0	0	0	0	8	8
Springfield	0	1	1	1	8	9	0	0	0	11	35
Michigan:											
Detroit	9	-----	3	9	35	549	0	23	2	71	310
Flint	1	-----	0	-----	5	27	0	0	0	0	27
Grand Rapids	0	-----	0	18	7	8	0	0	0	13	34
Wisconsin:											
Kenosha	0	-----	0	1	0	3	0	0	0	10	7
Madison	1	-----	0	0	0	6	0	0	0	7	15
Milwaukee	0	3	3	1	12	73	0	2	0	45	119
Racine	0	-----	0	1	0	7	0	0	0	2	16
Superior	0	-----	0	0	2	3	0	0	0	1	8
Minnesota:											
Duluth	0	-----	1	1	1	8	0	0	0	8	21
Minneapolis	1	-----	0	5	7	26	0	2	0	22	88
St. Paul	0	2	2	2	7	22	1	0	0	86	74

City reports for week ended Mar. 6, 1937—Continued

State and city	Diph- theria cases	Influenza		Mea- sles cases	Pneu- monia deaths	Scar- let fever cases	Small- pox cases	Tuber- culosis deaths	Ty- phoid fever cases	Whoop- ing cough cases	Deaths, all causes
		Cases	Deaths								
Iowa:											
Cedar Rapids	0			0		3	0		0	0	
Davenport	0			0		4	0		0	2	
Des Moines	0			0		54	0		0	2	43
Sioux City	0			0		21	2		0	1	
Waterloo	0			1		25	0		0	17	
Missouri:											
Kansas City	1	1	0	3	12	91	1	5	1	9	112
St. Joseph	0		1	0	8	24	41	1	0	0	35
St. Louis	5		3	2	18	78	1	13	1	90	231
North Dakota:											
Fargo	0		0	0	0	7	1	0	0	0	7
Grand Forks	0			0		0	0	0	0	0	
Minot	0		0	0	0	0	0	0	0	0	10
South Dakota:											
Aberdeen	0			0		5	0		0	0	
Sioux Falls	0		0	0	0	0	0	0	0	0	8
Nebraska:											
Omaha	1		1	0	4	5	1	1	0	5	51
Kansas:											
Lawrence	0	2	0	0	1	0	0	1	0	0	5
Topeka											
Wichita	0		0	0	2	9	8	1	0	3	24
Delaware:											
Wilmington	0		0	16	8	1	0	4	0	3	44
Maryland:											
Baltimore	4	20	5	579	35	16	0	19	0	91	257
Cumberland	0		0	0	0	1	0	0	0	3	9
Frederick	0		0	3	0	0	0	0	0	0	4
District of Colum- bia:											
Washington	4	3	7	75	22	13	0	12	0	9	194
Virginia:											
Lynchburg	2		3	10	4	1	0	0	0	4	12
Norfolk											
Richmond	2		4	0	5	0	0	4	0	0	54
Roanoke	0		0	33	4	0	0	1	0	3	17
West Virginia:											
Charleston	0	10	3	0	6	3	0	0	0	1	25
Huntington	1			0		0	0	0	0	0	
Wheeling	0		0	0	4	3	0	0	0	5	24
North Carolina:											
Gastonia	0			0		0	0		0	1	
Raleigh	0		0	0	1	0	0	0	0	1	13
Wilmington	0		0	0	3	0	0	0	0	1	10
Winston-Salem	1	1	0	1	3	6	0	1	0	0	15
South Carolina:											
Charleston	0	130	2	0	6	5	0	2	0	0	39
Columbia											
Florence	0		0	0	2	0	0	0	0	0	13
Greenville	0		0	0	2	1	0	0	0	0	16
Georgia:											
Atlanta	1	81	5	0	16	3	0	8	0	3	116
Brunswick	0		0	1	0	0	0	0	0	0	3
Savannah	3	74	5	0	6	0	0	1	0	1	37
Florida:											
Miami	2	11	1	0	1	2	0	3	1	3	45
Tampa	0	2	2	0	2	0	0	0	0	1	28
Kentucky:											
Ashland	0	13		1	7	2	0	4	0	2	34
Covington	0		1	2	1	1	0	0	0	2	18
Lexington	1	5	0	15	6	1	0	2	0	0	37
Louisville	2		2	2	23	7	0	1	0	83	105
Tennessee:											
Knoxville	0	9	6	1	2	1	0	0	0	1	38
Memphis	0		8	1	32	3	0	5	0	26	125
Nashville	0		5	1	7	4	0	5	0	0	58
Alabama:											
Birmingham	0	197	7	0	8	1	0	6	0	7	91
Mobile	0	17	8	1	3	3	0	0	0	2	30
Montgomery	0	2		0		0	0		0	0	
Arkansas:											
Fort Smith	1			0		7	0		0	0	
Little Rock	0		3	0	5	6	0	1	0	1	9
Louisiana:											
Lake Charles	0		1	0	6	0	0	0	0	0	10
New Orleans	4	35	10	2	24	2	0	16	1	0	165
Shreveport	0		1	2	9	0	0	3	0	4	59

City reports for week ended Mar. 6, 1937—Continued

State and city	Diph- theria cases	Influenza		Mea- sles cases	Pneu- monia deaths	Scar- let fever cases	Small- pox cases	Tuber- culosis deaths	Ty- phoid fever cases	Whoop- ing cough cases	Deaths, all causes
		Cases	Deaths								
Oklahoma:											
Muskogee	0		0	0	0	1	0	0	0	0	1
Oklahoma City	1	90	2	0	10	8	0	1	0	0	53
Tulsa	1			0		9	0		0	2	
Texas:											
Dallas	2	14	6	19	9	17	0	5	0	11	72
Fort Worth	1		2	57	14	9	1	2	0	2	51
Galveston	3		0	2	7	1	0	0	0	0	24
Houston	3	14	4	0	17	3	0	10	0	2	117
San Antonio	0		14	16	15	0	0	3	0	1	82
Montana:											
Billings	0		0	0	1	1	0	0	0	0	7
Great Falls	0		0	0	0	0	0	0	0	0	1
Helena	0	14	0	35	1	6	0	0	0	0	4
Missoula	0		0	0	1	1	2	0	0	0	7
Idaho:											
Boise	0		0	0	2	0	0	0	0	0	4
Colorado:											
Colorado											
Springs	0		0	1	1	3	0	1	0	0	14
Denver	2		1	1	7	17	0	4	1	73	99
Pueblo	0		0	0	5	0	0	0	0	3	13
New Mexico:											
Albuquerque	0	10	0	0	0	4	0	3	0	5	15
Utah:											
Salt Lake City	0		0	18	1	7	0	2	0	30	34
Nevada:											
Reno											
Washington:											
Seattle	2		1	5	2	2	0	5	0	8	104
Spokane	0	1	1	2	1	6	1	0	0	2	24
Tacoma	1		1	0	4	5	0	0	0	1	39
Oregon:											
Portland	0	3	0	0	2	5	1	5	0	1	73
Salem	0	6		0		1	0		0	2	
California:											
Los Angeles	3	90	4	31	33	32	2	23	0	67	302
Sacramento	5	42	1	1	7	10	0	1	0	10	34
San Francisco	3	166	5	0	10	20	0	19	0	13	208

City reports for week ended Mar. 6, 1937—Continued

State and city	Meningococcus meningitis		Polio-myelitis cases	State and city	Meningococcus meningitis		Polio-myelitis cases
	Cases	Deaths			Cases	Deaths	
Massachusetts:				West Virginia:			
Boston.....	7	3	1	Wheeling.....	0	1	0
Springfield.....	2	0	0	North Carolina:			
Rhode Island:				Wilmington.....	2	0	0
Pawtucket.....	1	0	0	Florida:			
Providence.....	1	2	0	Tampa.....	1	0	0
New York:				Kentucky:			
Buffalo.....	1	0	0	Ashland.....	0	2	0
New York.....	8	4	0	Lexington.....	1	1	0
Rochester.....	1	0	0	Tennessee:			
New Jersey:				Knoxville.....	0	1	0
Newark.....	2	0	0	Memphis.....	1	1	0
Pennsylvania:				Nashville.....	1	0	0
Philadelphia.....	1	1	0	Alabama:			
Pittsburgh.....	1	3	0	Birmingham.....	1	3	0
Reading.....	1	0	0	Mobile.....	0	1	0
Ohio:				Louisiana:			
Cincinnati.....	2	1	0	New Orleans.....	2	1	0
Cleveland.....	1	0	0	Shreveport.....	0	4	0
Indiana:				Oklahoma:			
Indianapolis.....	1	2	1	Muskogee.....	1	1	0
Illinois:				Texas:			
Chicago.....	5	2	0	Dallas.....	0	1	0
Springfield.....	0	0	1	Fort Worth.....	0	1	0
Michigan:				Houston.....	3	0	0
Detroit.....	1	0	0	Colorado:			
Minnesota:				Denver.....	0	0	1
St. Paul.....	1	0	0	New Mexico:			
Iowa:				Albuquerque.....	1	1	0
Des Moines.....	0	0	2	Washington:			
Missouri:				Spokane.....	2	1	0
Kansas City.....	1	1	0	California:			
St. Joseph.....	1	0	0	Los Angeles.....	1	1	1
St. Louis.....	1	0	0	Sacramento.....	0	0	2
Maryland:				San Francisco.....	2	2	0
Baltimore.....	5	2	0				
District of Columbia:							
Washington.....	0	0	1				

Dengue.—Cases: Charleston, S. C., 2.

Encephalitis, epidemic or lethargic.—Cases: Philadelphia, 1; Pittsburgh, 1; Cleveland, 1; Baltimore, 1.

Psittacosis.—Cases: Baltimore, 1; Charleston, S. C., 2; Savannah, 1; Montgomery, 1; Los Angeles, 2.

FOREIGN AND INSULAR

CANADA

Provinces—Communicable diseases—2 weeks ended February 27, 1937.—During the 2 weeks ended February 27, 1937, cases of certain communicable diseases were reported by the Department of Pensions and National Health of Canada as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Cerebrospinal meningitis.....	2		1	2	4	1			1	11
Chicken pox.....		18	10	680	750	72	57	24	57	1,668
Diphtheria.....		3	6	95	11	3	5	2		125
Dysentery.....				5						5
Erysipelas.....				22	9	8	6	2	5	53
Influenza.....	3	214	486	9,443	3,226	3,679	528		1,968	19,547
Lethargic encephalitis.....				1						1
Measles.....		52	317	2,571	1,198	120	629	214	1,155	6,256
Mumps.....		4	417		877	25	51	13	82	1,409
Pneumonia.....	8	3		2	90		14		87	211
Poliomyelitis.....				2		1				3
Scarlet fever.....	1	27	10	359	292	90	105	134	43	1,061
Smallpox.....							1			1
Trachoma.....									3	4
Tuberculosis.....	1	25	18	246	89	15	2	2	25	425
Typhoid fever.....				64	3	1			1	69
Undulant fever.....				3						3
Whooping cough.....		9	3	455	179	61	20	10	9	746

NOTE.—Figures for Quebec are for the 4 weeks ended Feb. 27, 1937.

DENMARK

Notifiable diseases—October, November, and December 1936.—During the months of October, November, and December 1936, cases of certain notifiable diseases were reported in Denmark as follows:

Disease	October	November	December	Disease	October	November	December
Cerebrospinal meningitis.....	6	3	5	Paratyphoid fever.....	4	8	3
Chicken pox.....	15	21	35	Poliomyelitis.....	5	4	3
Diphtheria and croup.....	135	181	146	Puerperal fever.....	14	18	5
Epidemic encephalitis.....	2	1		Scabies.....	1,323	1,333	1,252
Erysipelas.....	311	325	312	Scarlet fever.....	1,283	1,118	901
German measles.....	14	6	14	Syphilis.....	84	63	60
Gonorrhea.....	890	827	781	Tetanus, neonatorum.....	5	8	5
Influenza.....	5,395	19,413	102,788	Tetanus, traumatic.....			1
Malaria.....	7	12	7	Typhoid fever.....	9	2	1
Measles.....	57	62	118	Undulant fever (Bact. abort. Bang).....			
Mumps.....	373	633	981	Whooping cough.....	1,899	1,909	2,108
Paratyphoid fever.....	25	49	9				

SIAM

Cholera.—A report dated February 24, 1937, received from the American Consulate General at Bangkok, Siam, states that the cholera epidemic declined sharply in Bangkok during the week ended February 6 and in the country as a whole for the week of February 20. Since the beginning of the epidemic in December 1936, there have been reported 2,030 cases, with 1,255 deaths.¹ Decreases in the number of cases and deaths were reported in February, although the number of infected districts increased in the three weeks ended February 20 from 57 to 78.

SWEDEN

Notifiable diseases—January 1937.—During the month of January 1937, cases of certain notifiable diseases were reported in Sweden as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis.....	2	Poliomyelitis.....	* 60
Diphtheria.....	23	Scarlet fever.....	1,093
Dysentery.....	14	Typhoid fever.....	8
Epidemic encephalitis.....	1	Undulant fever.....	16
Paratyphoid fever.....	8	Well's disease.....	1

* Includes 5 cases nonparalytic at time of notification.

¹ See table, p. 373, for reports by weeks.

Place	September 1936				October 1936				November 1936				December 1936				January 1937			
	1-10		11-20		21-30		1-10		11-20		21-30		1-10		11-20		21-30		1-10	
	1-10	11-20	21-30	1-10	11-20	21-30	1-10	11-20	21-30	1-10	11-20	21-30	1-10	11-20	21-30	1-10	11-20	21-30	1-10	11-20
Siam:																				
Bangkok.....																				
Provinces.....																				
	C	1	57	18	12	29	63	92	7	8	19	54	62	52	40	37				
	C	117							101	119	109	221	245	252	385	305				
Indochina (French) (see also table above):																				
Cambodia ¹	2	2																		
	2	1																		
Cochinchina ²	1																			
	1																			
	1																			

¹ Suspected.² Imported.³ Reports incomplete.PLAGUE¹

[C Indicates cases; D, deaths; P, present]

Place	Week ended—																	
	July 1936				August 1936				September 1936				November 1936					
	July 25-29, 1936	July 30-Aug. 3, 1936	Aug. 4-8, 1936	Aug. 9-13, 1936	Aug. 14-18, 1936	Aug. 19-23, 1936	Aug. 24-28, 1936	Sept. 1-5, 1936	Sept. 6-10, 1936	Sept. 11-15, 1936	Sept. 16-20, 1936	Sept. 21-25, 1936	Nov. 1-5, 1936	Nov. 6-10, 1936	Nov. 11-15, 1936	Nov. 16-20, 1936	Nov. 21-25, 1936	Nov. 26-30, 1936
Algeria:																		
Algiers.....	C																	
Plague-infected rats.....																		
Oran Department.....	C																	
Philippeville.....	C																	
Argentina. (See table below.)																		
Belgian Congo.....	C																	
Brazil (see also table below):																		
Santos.....	C	4																
Sao Paulo. ²	D	1																

¹ Including plague in the United States and its possessions.² Suspected.³ A report dated July 29, 1936, states that 23 cases of pneumonic plague with 18 deaths were reported in Sao Paulo, Brazil.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

PLAGUE—Continued

[C indicates cases; D, deaths; P, present]

Place	Week ended—											
	December 1936				January 1937				February 1937			
	5	12	19	26	2	9	16	23	30	13	20	27
Nov. 1-28, 1936												
Sept. 27- Oct. 31, 1936												
Aug. 30- Sept. 26, 1936												
July 26- Aug. 29, 1936												
Place	Aug. 1936	Sept. 1936	Oct. 1936	Nov. 1936	Dec. 1936	Jan. 1937	Feb. 1937	Mar. 1937	Apr. 1937	May 1937	June 1937	July 1937
S. S. <i>Ipanema</i> at Marseille from Bone and Philippeville.												
S. S. <i>Delaunoy</i> at Liverpool from Montevideo, Buenos Aires, Rosario, Santos, and Las Palmas—Plague-infected rats.												
On vessels:												
S. S. <i>Ipanema</i> at Marseille from Bone and Philippeville.												
S. S. <i>Delaunoy</i> at Liverpool from Montevideo, Buenos Aires, Rosario, Santos, and Las Palmas—Plague-infected rats.												
On vessels:												
S. S. <i>Ipanema</i> at Marseille from Bone and Philippeville.												
S. S. <i>Delaunoy</i> at Liverpool from Montevideo, Buenos Aires, Rosario, Santos, and Las Palmas—Plague-infected rats.												
On vessels:												
S. S. <i>Ipanema</i> at Marseille from Bone and Philippeville.												
S. S. <i>Delaunoy</i> at Liverpool from Montevideo, Buenos Aires, Rosario, Santos, and Las Palmas—Plague-infected rats.												
On vessels:												
S. S. <i>Ipanema</i> at Marseille from Bone and Philippeville.												
S. S. <i>Delaunoy</i> at Liverpool from Montevideo, Buenos Aires, Rosario, Santos, and Las Palmas—Plague-infected rats.												
On vessels:												
S. S. <i>Ipanema</i> at Marseille from Bone and Philippeville.												
S. S. <i>Delaunoy</i> at Liverpool from Montevideo, Buenos Aires, Rosario, Santos, and Las Palmas—Plague-infected rats.												
On vessels:												
S. S. <i>Ipanema</i> at Marseille from Bone and Philippeville.												
S. S. <i>Delaunoy</i> at Liverpool from Montevideo, Buenos Aires, Rosario, Santos, and Las Palmas—Plague-infected rats.												
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S. S. <i>Delaunoy</i> at Liverpool from Montevideo, Buenos Aires, Rosario, Santos, and Las Palmas—Plague-infected rats.												
On vessels:												
S. S. <i>Ipanema</i> at Marseille from Bone and Philippeville.												
S. S. <i>Delaunoy</i> at Liverpool from Montevideo, Buenos Aires, Rosario, Santos, and Las Palmas—Plague-infected rats.												
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S. S. <i>Delaunoy</i> at Liverpool from Montevideo, Buenos Aires, Rosario, Santos, and Las Palmas—Plague-infected rats.												
On vessels:												
S. S. <i>Ipanema</i> at Marseille from Bone and Philippeville.												
S. S. <i>Delaunoy</i> at Liverpool from Montevideo, Buenos Aires, Rosario, Santos, and Las Palmas—Plague-infected rats.												
On vessels:												
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S. S. <i>Delaunoy</i> at Liverpool from Montevideo, Buenos Aires, Rosario, Santos, and Las Palmas—Plague-infected rats.												
On vessels:												
S. S. <i>Ipanema</i> at Marseille from Bone and Philippeville.												
S. S. <i>Delaunoy</i> at Liverpool from Montevideo, Buenos Aires, Rosario, Santos, and Las Palmas—Plague-infected rats.												
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On vessels:												
S. S. <i>Ipanema</i> at Marseille from Bone and Philippeville.												
S. S. <i>Delaunoy</i> at Liverpool from Montevideo, Buenos Aires, Rosario, Santos, and Las Palmas—Plague-infected rats.												
On vessels:												
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S. S. <i>Delaunoy</i> at Liverpool from Montevideo, Buenos Aires, Rosario, Santos, and Las Palmas—Plague-infected rats.												
On vessels:												

* Includes 1 case of pneumonic plague.

Pneumonic plague.

¹² From Jan. to Aug. 31

.....

SMALLPOX

[C indicates cases; D, deaths; P, present]

Place	Week ended—											
	July 1936			August 1936			September 1936			November 1936		
	26-29	30-31	1-2	26-29	30-31	1-2	26-29	30-31	1-2	26-29	30-31	1-2
Algeria:												
Algiers Department.....												
Philippeville.....	1											
Angola. (See table below.)												
Argentina. (See table below.)												
Belgian Congo. (See table below.)												
Bolivia. (See table below.)												
Brazil:												
Bahia.....	43	90	90									
Porto Alegre (Alastim).....	2	1	4									
Recife (Alastim).....			3									
British East Africa: Tanganyika.....	94	74	453									
British Somaliland.....	2											
Canada:												
Alberta.....	11											
British Columbia.....												
Saskatchewan.....	11											
Ceylon: Colombo.....	1		1									
China (see also table below):												
Amoy.....												
Canton.....												
Dairen.....												
Foochow.....	2											
Hankow.....	P											
Hankow.....		P										
Hankow.....		1										
Hong Kong.....												
Kanking.....		1										
Shanghai.....	9	7	24									
Tientsin.....		2	2									
Chosen. (See table below.)												
Colombia.....	126	70	84									
Barranquilla.....	6	1	1									
Dutch East Indies: Surabaya.....												
Ecuador: Guayaquil.....	1	1	3									

1 For 2 weeks.
 2 For 3 weeks.
 * Imported.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place	Week ended—																	
	December 1936					January 1937					February 1937							
	July 25- Aug. 29, 1936	Aug. 30- Sept. 31, 1936	Sept. 27- Oct. 31, 1936	Nov. 1-28, 1936	5	12	19	26	2	9	16	23	30	6	13	20	27	
Egypt: Alexandria				11														
Eritrea (See table below.)																		
Ethiopia				13														
Finland	8																	
France (See table below.)																		
Great Britain: England and Wales—																		
London and Great Towns (Oldham)											2							
Lancaster—Fallowfield																		
Greece: Salonika																		
Guatemala. (See table below.)																		
India																		
Assam	5,419	3,413	2,388	3,559	1,300	1,558	985	763	2,258	2,118								
Bassén	1,478	886	682	868	304	385	284	183	400	584	543							
Bombay Presidency	70	70	64	36	20	37		35	20	47	64	44	37	47	78	60		
Assam	510	258	183	116	53		43	35	34	57	102							
Bassén	100	46	41	27	6		4	11	15	9	13							
Bombay	30	17	11	3	1	2	2	2	2	3	2	10	6	8	17	11		
Calcutta	28	14	6	3	3		2	1	5	3	4	4	4	6	6	7		
Central Provinces and Berar	45	6	12	8	3	3	1	2	3	4	5	8	9	13	17			
Chittagong	39	8	7	2	2	1	3	1	1	2	3	4	4	7	11			
Cochin	187	70	46	38	19	38	11	47	6	36	21	80	83	53	97	81		
Karachi				2	2	6			48	46	38	48	57	67	62	91		
Madras Presidency	1,122	442	470	298	60	66	26	3	10	11	11	9	8	8	9	14		
Madras	1,205	96	96	59	11	17	9		71	131	168							
Moulmein	2	3	1	3	6	1			11	34	27							
Northwest Frontier Province	10	12	3	12	13	13	8	9										
Orissa Province	7	22	14	15	13	13												
Punjab				21	20	11	35	24	12	13	10	13	14	19	16			
Rangoon				137	130	146	187	81	137	226	289	275						
Sind State	52	65	77	264	59	59	121	75	131	146	187	81	137	226	289	275		
Visagapatnam	5	5	1	10	1	1	1	1	117	111	109	101	95	95	168			
Madia (French): Pondicherry Province	31	51	21	52	35	60	42	6	55	42	60	29	26	73	22			
	2	1	1															

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place	August 1936	September 1936	October 1936	November 1936	December 1936	January 1937
Angola.....	C	153				
Argentina:						
Chaco Territory.....	1					
Corrientes Province.....	6	3	1	18	1	
Entre Rios Province.....	C					
Jujuy Province.....	1		12	12		
La Paz Province.....	C		31	32		
Los Andes Territory.....	C					
Salta Province.....	C					
Santa Fe Province.....	C	2				
Santiago Province.....	C	88	105	117	93	
Belgian Congo.....	C	12				
Bolivia.....	C	10	3	2		
Chosen.....	C	2				
Eritrea.....	C	2				
Finland.....	C					
France.....	C	2				
Guatemala.....	C	13	1	1	4	5
Indochina (see also table above). C	119	87	39	159	219	306
Uruguay.....	21	8	12	33	38	84
Mexico (see also table above):						
Chihuahua State—Chihuahua	C					
Colima State.....	C	1				
Jalisco State—Guadalajara.....	C	3				
Mexico State.....	C	1				
Mexico, D. F.....	C	5				
Mexico City.....	C	1	1	1	2	
Puebla State—Fuebla.....	C	2				
Queretaro State.....	C					
Sonora State.....	C	2	1			
Morocco.....	C					
Nyasaland.....	C					
Palestine.....	C					
Peru.....	C	74	23	24	13	
Portugal (see also table above).....	C	83	82	126		
Uruguay.....	C	3	4	5		

TYPHUS FEVER

[C Indicates cases; D, deaths; P, present]

Place	Week ended --															
	November 1936				December 1936				January 1937				February 1937			
	7	14	21	28	5	12	19	26	2	9	16	23	30	6	13	20
Sept. 27-Oct. 31, 1936																
Aug. 30-Sept. 26, 1936																
July 25-Aug. 20, 1936																
Algeria:																
Algers Department.....	24			3		1	13	13		3	9	149	10		168	
Algers.....	1			1		3		1				1			12	
Constantine Department.....	42	1	10	6	4	11	15	30		19		194	46		198	
Bone.....												11	1		110	
Constantine.....	2	1		1	1		13									
Philippeville.....							1					14	2			
Oran Department.....	2									2		14	4			
Southern Territories.....												14	5		3	
Basutoland.....																
Australia: Sydney.....																
Bulgaria.....																
Bolivia. (See table below.)																
Australia: Sydney.....	1															
Basutoland.....																
Bolivia.....																
Bulgaria.....																
Ceylon: Colombo.....	508	543	577	105	157											
Chile.....	87	83														
Santiago.....	3	1		12	14	3	3	1	2	2	4	2	2	2	1	3
Valparaiso.....																
China:																
Dairen.....				2		3	1									
Hankow.....				1												
Shanghai.....				2					1	1						
Tientsin.....				1												
Tsingtao.....	2						3									
Chosen. (See table below.)																
Czechoslovakia. (See table below.)																
Egypt:																
Alexandria.....	2			2				1	1			4	5	1	5	3
Aswan Province.....																
Assut Province.....	4	1		1										1		
Behaira Province.....	1								1	7				24		
Cairo.....	1			4												
Dakahlia Province.....																
Faiyum Province.....																
Gharbiya Province.....																
Girga Province.....	3			2			3		1	5				5		
	2					2								8		

! For 2 weeks.

! For 3 weeks.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

TYPHUS FEVER—Continued

[C indicates cases; D, deaths; P, present]

Place	July 26-Aug. 26, 1936	Aug. 30-Sept. 26, 1936	Sept. 27-Oct. 31, 1936	Week ended—													
				November 1936							December 1936						
				7	14	21	28	5	12	19	26	2	9	16	23	30	January 1937
Egypt—Continued.																	
Matruh Province.....	2											1					
Minya Province.....												1	2				
Port Said.....	4											3	2				
Sharqiya Province.....	1											1					
Suez.....	30	5	12	3	3	3	6		2	4	8	6	13	23	49	21	62
Provinces.....														13		1	
Eritrea: Asmara.....																	
Finland. (See table below.)																	
France. (See table below.)	4	4	5	1	1	1	1	1	1	1	1	1					
Greece (see also table below): Salonika.....	3	7	12	2	5			1		1		2	1	2			
Guatemala. (See table below.)																	
Hawaii Territory: Honolulu.....	4	11	3	1					3	1						7	
Hungary.....	4	2															
Iran.....																	
Teheran.....																	
Iraq: Baghdad.....	2	3	2														
Irish Free State: Kerry County 1—Dingle.....																	
Italy: Catania.....																	
Lithuania. (See table below.)																	
Mexico (see also table below):																	
Durango.....	1																
Mexico, D. F.....	20	23	16	4	2	1		2	1			1	6	4		2	
Saltillo.....			1														
San Luis Potosi.....					1				1			1	1				
Torreón.....	1	1	2										1	2	1		
Morocco (see also table below):																	
Palestine:																	
Haifa.....	13	16	10	2	3			3	2	3			1			1	
Jaffa.....	13	23	12	6	1				4	4		1		1			
Paraguay: Asunción.....	3	1															
Peru. (See table below.)																	
Poland.....	49	47	63	15	34	46	36	53	40	49	33	49	58	77	87	128	88
		3		1	1	1	3	5	2	2	4	4	6	2	5	5	5

Portugal. (See table below.)
 Rumania. (See table below.)
 Sierra Leone: Freetown.
 Straits Settlements: Singapore.
 Sudan (Anglo-Egyptian).
 Trans-Jordan.
 Tunisia:
 Tunis.
 Provinces.
 Turkey. (See table below.)
 Union of South Africa. (See table below.)
 Yugoslavia. (See table below.)

Place	August 1936	Septem- ber 1936	October 1936	Novem- ber 1936	Decem- ber 1936	January 1937	Place	August 1936	Septem- ber 1936	October 1936	Novem- ber 1936	Decem- ber 1936	January 1937
Bolivia.....	29	4	1	1	1	1	Mexico (see also table above)— Continued.	4	2	2	2	2	2
China: Manchuria—Harbin.....	3	24	24	30	3	3	Oaxaca State.....	10	6	6	2	2	2
Chosen.....	20	1	1	1	1	1	Puebla State.....	1	1	1	3	3	3
Czechoslovakia.....	1	1	1	1	1	1	Queretaro State.....	1	1	1	1	1	1
Finland.....	1	1	1	1	1	1	San Luis Potosi State: San Luis Potosi.....	4	2	1	1	1	1
France.....	10	9	11	11	2	2	Morocco (see also table above).....	2	48	50	60	2	11
Greece (see also table above).....	30	38	17	33	28	13	Peru.....	67	2	2	178	380	24
Lithuania.....	1	1	1	1	1	1	Portugal.....	32	25	21	18	21	4
Mexico (see also table above): Aguascalientes State: Aguas- calientes.....	3	1	2	1	1	1	Rumania.....	15	27	27	4	1	4
Chihuahua State.....	1	1	1	1	1	1	Turkey.....	1	1	3	3	3	3
Durango State.....	7	1	1	1	1	1	Union of South Africa: Cape Province.....	113	43	75	74	61	4
Guatemala State.....	1	1	1	1	1	1	Natal.....	7	7	7	19	4	4
Yalisco State: Guadaluajara.....	10	4	18	18	18	18	Orange Free State.....	15	14	43	9	8	8
Mexico State.....	2	1	1	1	1	1	Transvaal.....	10	6	4	11	6	6
Mexico, D. F.....	19	21	14	7	3	5	Yugoslavia.....	16	1	7	7	49	148
Mexico City.....	1	8	7	3	5	5							

1 For 2 weeks.

2 During the week ended Feb. 27, 1937, 4 cases of typhus fever were reported in Caherdveen, Kerry County, Irish Free State.

